

Amendments to the Claims

Claim 1 (currently amended): A process to produce 5-tert-butyl-metaxylene comprising:

- a) adding a suitable alkylating agent to a mixture comprising active clay catalyst, a pressure-maintaining amount of non-reactive gas, and an effective amount of metaxylene into a reactor at reaction conditions comprising a temperature of at least 125°C and a pressure of at least 450 kPa at an alkylating agent addition rate effective to form 5-tert-butyl-metaxylene;
- b) recovering a portion of the 5-tert-butyl-metaxylene and a portion of the metaxylene without removal of the active clay catalyst from the reactor;
- c) separating the 5-tert-butyl-metaxylene from the metaxylene;
- d) recycling at least a portion of the separated metaxylene to the reactor.

Claim 2 (original): The process to produce 5-tert-butyl-metaxylene of claim 1, wherein the active clay catalyst is an active dioctahedral smectite clay.

Claim 3 (original): The process to produce 5-tert-butyl-metaxylene of claim 1, wherein the weight ratio of metaxylene to active clay catalyst in the mixture is greater than about 4:1.

Claim 4 (original): The process to produce 5-tert-butyl-metaxylene of claim 1, wherein the alkylating agent addition rate is less than about 0.35 g/min for every 100 g of metaxylene in the mixture.

Claim 5 (original): The process to produce 5-tert-butyl-metaxylene of claim 1, wherein the alkylating agent is isobutylene.

Claim 6 (currently amended): A process to produce 5-tert-butyl-metaxylene comprising:

- a) adding a suitable alkylating agent to a mixture comprising active clay catalyst, a pressure-maintaining amount of non-reactive gas, and an effective amount of metaxylene into a reactor at reaction conditions comprising a temperature of at least 125°C and a pressure of at least 450 kPa at an alkylating agent addition rate effective to form 5-tert-butyl-metaxylene;

- b) recovering a portion of the 5-tert-butyl-metaxylene, a portion of the metaxylene, and a portion of the active clay catalyst from the reactor;
- c) separating the 5-tert-butyl-metaxylene from the recovered metaxylene and recovered active clay catalyst; and
- d) recycling at least a portion of the recovered active clay catalyst and at least a portion of the recovered metaxylene to the reactor.

Claim 7 (original): The process to produce 5-tert-butyl-metaxylene of claim 6, wherein the active clay catalyst is an active dioctahedral smectite clay.

Claim 8 (original): The process to produce 5-tert-butyl-metaxylene of claim 6, wherein the weight ratio of metaxylene to active clay catalyst in the mixture is greater than about 4:1.

Claim 9 (original): The process to produce 5-tert-butyl-metaxylene of claim 6, wherein the alkylating agent addition rate is less than about 0.35 g/min for every 100 g of metaxylene in the mixture.

Claim 10 (original): The process to produce 5-tert-butyl-metaxylene of claim 6, wherein the alkylating agent is isobutylene.

Claim 11 (currently amended): A process to produce 5-tert-butyl-metaxylene comprising:

- a) adding a suitable alkylating agent to a mixture comprising active clay catalyst, a pressure-maintaining amount of non-reactive gas, and an effective amount of metaxylene into a reactor at reaction conditions comprising a temperature of from about 131°C to about 156°C. and a pressure of from about 515 kPa to about 620 kPa at an alkylating agent addition rate of from about 0.11 g/min to about 0.35 g/min for every 100 g of metaxylene in the reactor;
- b) recovering a portion of the 5-tert-butyl-metaxylene, a portion of the metaxylene, and a portion of the active clay catalyst from the reactor;
- c) separating the 5-tert-butyl-metaxylene from the recovered metaxylene and recovered active clay catalyst; and
- d) recycling at least a portion of the recovered active clay catalyst and at least a portion of the recovered metaxylene to the reactor.

Claim 12 (original): The process to produce 5-tert-butyl-metaxylene of claim 11, wherein the active clay catalyst is an active dioctahedral smectite clay.

Claim 13 (original): The process to produce 5-tert-butyl-metaxylene of claim 11, wherein the alkylating agent is isobutylene.

Claim 14 (original): The process to produce 5-tert-butyl-metaxylene of claim 11, wherein the weight ratio of metaxylene to active clay catalyst in the mixture is about 9:1.

Claim 15 (original): The process to produce 5-tert-butyl-metaxylene of claim 11, wherein the reactor pressure is about 585 psig.

Claim 16 (original): The process to produce 5-tert-butyl-metaxylene of claim 11, wherein the alkylating agent addition rate is from about 0.13 g/min to about 0.29 g/min for every 100 g of metaxylene in the mixture.

Claim 17 (original): The process to produce 5-tert-butyl-metaxylene of claim 11, wherein the active clay catalyst is an active montmorillonite clay.